# Examining Trust as Key Drivers in Smart Disclosure for Sustainable Consumption: The Case of I-Choose

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## ABSTRACT
Smart disclosure constitutes a form of open data policy that has the objective of promoting more sustainable economies and innovation by providing consumers with information to help them make better purchasing decisions. Trust in the information regarding product and certification is crucial for the adoption and usage of smart disclosure tools that make use of such information. In this paper, we investigate the determinants of trust in sustainable product information through a survey administered in Mexico and the United States. Our results suggest that brands and certificates reputation are important components to develop trust. Our results also suggest that additional information to verify label does not emerge as significant predictor to induce trust. We argue that to be useful, such information should be aggregated and presented to consumers in a simple way right at their fingertips. Finally, we found that support from government agencies and endorsement from non-for-profit organizations significantly influence consumer's trusting beliefs on sustainable practices information.

## Categories and Subject Descriptors
H.1.1 [**Information Systems**]: Systems and Information Theory *Value of Information*

H.1.2 [**Information Systems**]: User/Machine Systems *Human Information Processing*

## General Terms
Management, Measurement, Economics, Human Factors, Theory.

## Keywords
Consumer trust, Smart disclosure, Sustainability, supply-chain, ethical consumption, private sector transparency.

## 1. INTRODUCTION
With the heightened attention to the issue of sustainable development and environmental sustainability around the world, the question of the role of government is under careful examination. One traditional role of government has been regulating production standards to enforce modes of production and economic activities in an effort to reduce negative impacts on the environment. An emerging role, however, focuses on the role of government in providing access to information that fosters market transparency and efficiency, which in turn, lead to sustainable production and consumptions. This new role is based on the assumption that better informed consumers will make decisions pulling the whole supply chain to a more sustainable mode [8,17,30,34,57,58,59].

The open government and smart disclosure initiatives are examples of efforts on this emerging government role led by the Obama Administration to promote innovations that help consumers make important marketplace decisions, such as using their social and environmental value to guide their purchasing decisions [17,58]. However, the Smart Disclosure initiative is still in its forming stage because of a lack of integrated, high quality information regarding the sustainable practices of products, especially trustworthy information valued by consumers. Moreover, we are still lacking in-depth understanding about consumer trust mechanisms in using information. It is still not clear what information induces consumers' trust and how consumers react to various elements of information regarding product, producers, brand, certification, government enforcement, independent NGO review, and other information that can be disclosed. Disclosing information through open government initiatives does not automatically lead to informed decisions if the information is not in a form that can be readily valued and trusted by consumers.

Trust is viewed as an individual's belief that another individual or group will behave in good faith, with honesty, and would not take excessive advantage even when the opportunity exists [11]. Although trust may be induced by different mechanisms of trust production, there are two different modes of trust production that are particularly relevant to the domain of this study, cognitive-based trust and institution-based trust [31]. Cognitive-based trust is founded on information and rational choice. It arises only when the beneficial intention and competence of another is proved by reliable information [24,33,52]. Thus, trust in sustainable products rests on the availability and creditability of product information that can be traced through the entire supply chain. Market failures are often related to the lack of perfect information in the economics literature [2,9,23]. Presumably, government policy promoting information disclosure held not only by public entities, but also private entities contributes to market transparency and trust production in sustainable markets. This effectiveness of


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information disclosure on trust production, however, was under serious scrutiny because of the limited rationality and cognitive constraints of individuals [4,39]. On the other hand, trust is often related to institutional frameworks that make opportunistic behaviors less likely due to mechanisms such as guarantees or predominant norms that regulate the conscious and unconscious behavior of individuals. Institution-based trust is generated beyond a given transaction and specific relationship, and is based on a variety of institutional factors, such as legal contracts, social networks, and societal norms. Therefore, it is reasonable to postulate government efforts in establishing legal frameworks and other institutional conditions ensuring that product standards for sustainable products could be springboards for positive outcomes of consumer trust.

In this study, we integrate these two perspectives, and investigate the determinants of consumer trust in the presumed sustainability of a product. More specifically, we investigate how consumer perception of information related to product, producer, and certification influence their trusting belief on sustainable consumption. We argue that an understanding of consumer reactions to various elements of information regarding product and certification as the basis to building trust is crucial for the adoption and usage of smart disclosure tools that make use of such information. Such understanding is necessary for data owners and publisher in ensuring that data that is most relevant and appropriate to the user's needs is acknowledged and made available. It will also benefit smart disclosure application developers by providing guidance to the most efficient way to help consumers in making more informed, sustainable buying decisions, based on data that they trust.

This study is a component of an interdisciplinary research program to build interoperable data architectures that can be used to support consumers making informed decision regarding their sustainable consumption [29, 30], through the development of smart disclosure application and tool (I-Choose). As such, identification of the determinants that influence consumer's trust on sustainable products could assist the developer of interoperable architecture such as I-Choose in understanding the type of information that is aligned with consumers' interest in building architecture such as I-Choose. Such information is useful for the development of the ontology as the core of the data architecture in I-Choose.

This paper is organized into 6 sections including the foregoing introduction. Section two includes a literature review on trust in online environments, including the theoretical model and hypothesis used in the paper. Section three outlines the methodology highlighting the data collection process, measurement of variables and our analysis technique. Section four describes the analysis results and section five discusses our key findings. Finally, section six provides concluding remarks.

# 2. LITERATURE REVIEW

Trust has long been recognized as an important factor affecting consumer's intention and behavior. Although many researchers extensively investigated trust over several decades, we still lack research related to trust in product information, especially the information related to sustainable practices in production. This literature review presents an overview of consumer trust in product information, particularly for sustainably certified products. To provide some context, we first discuss the application of smart disclosure policy to support sustainable consumption. Subsequently, we outline the underlying dimensions and main determinants to trust production.

## 2.1 Smart Disclosure for Sustainable Consumption

Smart disclosure is part of policy propagated by the US government to use disclosure as a regulatory approach. Smart disclosure is defined as the "timely release of complex information and data in standardized, machine readable formats in ways that enable consumers to make informed decisions" by providing information upon which choices can be made by the public [57]. The basic premise of smart disclosure is giving more power to the general public by transferring control of personal data from the hands of corporate interests to the public [8]. It is argued that by providing more control of information to the public, smart disclosure has the potential to promote innovation, economic growth and job creation.

Recently, smart disclosure policy has been applied in various domains such as commerce, education, safety, global development, finance, energy and other domains. Proponents of smart disclosure argue that such policies can also be used to help consumers in making informed decisions by minimizing behavioral biases resulting from information overload and aversion to complexity that consequently cause consumers to make undesirable choices [34,59,64]. The potential of smart disclosure application also benefit sustainable development. In the energy and utility domains, smart disclosure policy has been used to support sustainable consumption of energy. The Green Button initiative is an example of a smart disclosure policy that helps consumers making informed choices for their energy usage thus supporting energy efficiency and green energy policy [53].

Such potential of smart disclosure also fits very well with increasing trend of information traceability in sustainable consumption. There are increasing demand for accurate, timely and traceable information about the sustainability of companies' products and practices. Consumers are increasingly requesting more information to verify company's sustainability practices, particularly in food and agriculture industry [10,27,28,40,65]. Smart disclosure policy can play an important role in supporting sustainable consumption and sustainable supply chain as a whole, making it possible to design and develop information-driven supply chains by supporting the development of simple tools and apps that reduce complexity and information overload and facilitate good buying and procurement decisions [29,63].

## 2.2 Consumer Trust on Sustainable Consumption

In spite of consumers' expressed concern for the environment, and the growing prevalence of green products on retail shelves, consumers are not willing to purchase sustainable products as expected. Studies found that difficulties in understanding product performance, lack of expertise by consumers and higher prices constitute some of the reasons for not buying sustainable products [15,32,60]. Gleim et al. [15] stated that time and effort which are needed to evaluate and search for sustainable product information impede green consumption behavior. Consequently, the role of consumer trust in sustainable product information becomes more important.

Many typologies of trust have been proposed in literature [7]. They are based on single dimensions of trust (e.g. cognitive, emotional, behavioral), on a variety of contents (and different drivers), on different analytical levels (interpersonal or

interorganizational), and on various levels of consistency (e.g. thick vs. thin), producing a wide range of concepts. However, there is no universally accepted conception of trust [3,35,48]. One of the accepted concepts of trust defines it as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" [48:395]. Based on this, consumer trust is defined as reducing his/hers need to act in a self-protective manner with firms and facilitates risk-taking behavior [18]. In online contexts, consumer trust on a seller is defined as his/her willingness to accept vulnerability in an online transaction based on positive expectations regarding the seller future behavior [22]. In this sense, trust is regarded as a dynamic relationships between two parties. In other words, trust may be considered as a tendency for an individual to repeatedly interact with another partner over time.

For the purposes of this study, trust in sustainable product information is preliminarily defined as "confidence that the source of product information is reliable and willing to act on the basis of the information provided together with the product." This definition highlights individual assessment or perception of the trustworthiness, i.e. trust beliefs [33,51]. Three trusting beliefs are used most often to characterize one party's trustworthiness: benevolence, competence and integrity [35]. Benevolence is the willingness of a party, beyond profit-seeking motivations, to benefit another [44]. Competence is a party's perception that another is able to have influence within some specific domain [33]. Finally, integrity is a party's perception that another consistently relies on acceptable principles of behavior [18,33].

In the context of the research presented in this paper, benevolence reflects ethical trait of consumer, capturing individual initial motivation in believing an information provider. This kind of altruism orientation reflects consumer's moral concerns on environmental values via purchasing sustainable products. On the other hand, because of the risk of low product performance in terms of sustainability, perceptions of information source's competence and integrity are also key components in conveying trust. Thus, via our conceptual model, we suggest that trust beliefs including benevolence, competence and integrity motivate consumers to take risks by accepting sustainable product information.

## 2.3 Model and Hypothesis Development: The antecedents of trust

Previous studies place *disposition to trust* as a crucial predictor of trust, in particular when an individual enters a new situation [19,33,37]. In the initial stages of a relationship, as people have had less interactions, lack of social cues or familiarity with each other, they are forced to base their trust primarily on personality-related traits [13]. This implies that "a tendency to be willing to depend on others across a broad spectrum of situations and persons" becomes a measure of an individual's disposition trust [35]. This personality-related trait means that some individuals have higher propensity to trust while some others have fewer in any situation, including purchasing decisions [33]. Thus, in any given relationship and exchange, disposition to trust takes an important role for forming trust and it will affect individual perception toward people and situations. Consequently, disposition to trust influences individuals, such as consumers, in the formation of trusting beliefs, intentions and behaviors [16]. In online settings, studies have empirically tested the impact of disposition to trust. Gefen [14] demonstrated that consumers' disposition to trust affect their trust in the vendor when they purchase online. This relationship also has been verified in virtual communities, relating predisposition to trust behaviors in knowledge acquisition from other community members [47].

In addition to trustors' predisposition, trust in online environments is also affected by attributes of trustee, a set of criteria or antecedents of trust, affect the formation of trusting beliefs and trusting intention [3,12]. These antecedents includes attribute such as products, reputation or labels [12]. Large number of studies focused on evaluating the antecedents of trust [6,13,42,62]. The antecedents of trust in general can be classified into four major categories: a) perceived trustworthiness of the technology (websites, apps or tools), b) perceived trustworthiness of the company (company reputation), c) perceived trustworthiness of assurance indicators (seals, trustmarks, etc), and d) perceived trustworthiness of the products or services (brand reputation) [3].

One factor contributing to the perceived trustworthiness of a company's products or services is reputation. Gefen [14] argues that users use cognitive familiarity as leverage to form trust on trustee in initial encounters. Reputation becomes an important antecedent to trust when users have lack of information, cues or prior experience in dealing with a trustee [14]. Individuals use reputation as initial trust in relationships with unfamiliar parties [26]. Trustees with good reputation are deemed more trustworthy [37] and reputation may affect trusting beliefs about the competence, benevolence and integrity of a given trustee [26]. Thus, we posit that brand and company reputation as well as certification reputation are antecedents of trusting beliefs formation.

Perceived assurance indicators, including certificates and labels, are also important antecedents to trust. Disposition toward a third-party certification has a positive effect on consumer's perception of third-party logos [19]. In the same line of research, Kim and Kim [21] conducted an online experiment to test hypothesized relationship between third-party certification and initial trust. They found the effects of third-party seal on trusting beliefs and trusting intentions.

Institutional structures are also crucial for the development of trust [25]. McKnight et al [37] argue that the existence of institutional support, such as government or NGOs endorsement, encourage users to be more likely to grant trust. The existence of institutional structures such as contracts, regulations, guarantees and other instruments provide assurance and safeguard for users to place their trust on an individual or an organization [26,56]. We thus argue that government roles in providing legal protection and additional information as well as NGO roles to endorse a certification and provide additional information may have positive influence on the likelihood that consumers form their trusting beliefs.

The role of additional information, however, is inconclusive in previous studies. On one hand, the existence of additional information is important in increasing the knowledge base, which in turn influences the building of cognitive-based trusting belief [26]. On the other hand, providing more information may be counterproductive for trust formation because individuals have constraints in their cognitive ability [4,39].

Finally, some studies empirically validate the cross-cultural effect of these antecedents of trust [18]. These studies argue that different cultures influence the perception and formation of trust differently [12].

Drawing on previous studies on trust and sustainable consumption, we identify eight major determinants of consumer's

trusting belief as depicted in Figure 1, leading to the following hypotheses.

Hypothesis 1: Disposition to trust label positively influences consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 2: Brand and company reputation have positive and significant influence on consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 3: Certification reputation has positive and significant influence on consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 4: Additional information to verify and trace label positively influence on consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 5: The roles of government as provider of information and provider of legal support and protection have positive and significant influence on consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 6: The roles of NGOs as provider of information and as endorser of a certification have positive and significant influence on consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 7: Prior knowledge of certification and label significantly affect consumers' formation of trusting beliefs and its sub-variables – benevolence, competence and integrity.

Hypothesis 8: Consumers' perception and formation of trusting beliefs on information on sustainable practices contained in a product's label and package differs based on their country of birth.

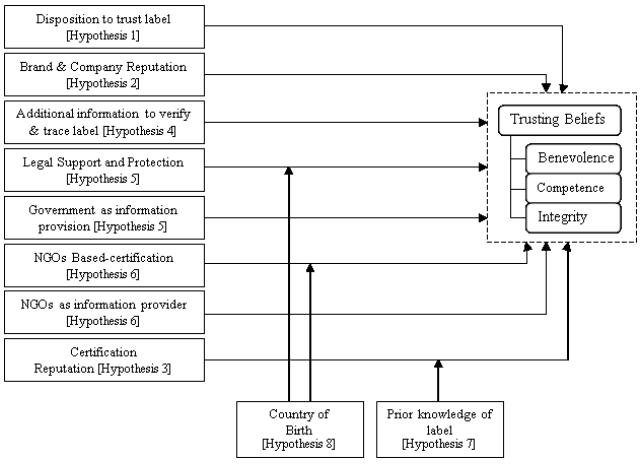


**Figure 1. Research Model.**

# 3. RESEARCH METHODOLOGY

In this section of the paper we introduce the methods and procedures followed to test the hypotheses introduced in the previous section

## 3.1 Data Collection

We sought to assess the empirical relationships between 6 factors as independent variables and 2 control variables to the dependent variables in the form of trusting belief on information contained in a product's label and package that refers to sustainable practices.

**Table 1. The Sample Distribution**

| | Categories | Proportion |
|---|---|---|
| Self-conscious about health | Very conscious | 76% |
| | The borderline | 18% |
| | Not very conscious | 6% |
| Self-conscious about sustainability | Very conscious | 45% |
| | The borderline | 35% |
| | Not very conscious | 20% |
| Sex | Female | 43% |
| | Male | 57% |
| Educational status | Undergraduate student | 86% |
| | Graduate student | 14% |
| Country of Origin | United States | 26% |
| | Mexico | 53% |
| | Other countries | 21% |

We distributed survey to students enrolled in a private university in Mexico and a liberal arts university in the United States. Students were enrolled in the classes of three of the authors of the paper. In this sense, we used a convenience sample. The survey was distributed in September 2013 and a total of 178 responses were received. To provide some context for the research, a decision-making assignment was distributed among all students before answering the survey. The survey instrument was developed initially in English, and revised by a panel of experts. It was applied in English and Spanish. The Spanish translation was translated back into English to verify the accuracy of the translation.

After data cleaning, we used 157 observations for our analysis. Table 1 shows the demographic distribution of the sample. Respondents are predominantly male (57%), undergraduate students (86%), very conscious about health issues (76%) as well as sustainability issues (45%) in their purchasing decisions. In terms of the country of origin, 53% of the respondents are from Mexico, 26% are from United States and the rest (21%) are from thirteen other countries in Europe and South and East Asia.

## 3.2 Variable development and measurement

All measures used in this study were found in the previous literature and adapted to the purpose of our study (see Table 2). The survey instrument included a total of 52 questions to create the scales related to all dependent and independent variables. The distribution of the items per variable, as well as the reliability measures are also reported in Table 2.

### *3.2.1 Dependent Variables*

The dependent variables used to test our model are described below:

**Trusting Beliefs**: This is our main dependent variable. This variable is composite variable based on 8 items pertaining to trusting beliefs on information contained in a product's label and package that refers to sustainable practices.

This variable consists of three sub-variables: competence, integrity and benevolence. The construction of these three sub-variables is as follows.

- **Competence**. This variable measures the competency of sustainable certification information depicting in product package and label to guide consumers buying sustainable products.
- **Benevolence**. This variable measures how sustainable certification information depicting in product package and label reflects the disposition of certification to do something good.
- **Integrity**. This variable measures how sustainable certification information depicting in product package and label reflects truthfulness, honesty and upholding other integrity values.

### *3.2.2 Independent Variables*

There are 6 independent variables of interest in this paper and 2 control variables with description as follows.

- **Disposition to trust label**. This variable measures the tendency of respondents to trust information provided by sustainable certification scheme regardless of other reasons.
- **Brand and company reputation**. This variable measures the importance of product brand and company's reputation for consumers in compare to the certification information.
- **Certification Reputation**. This variable measures the importance of reputation of the sustainable certification scheme for consumers in contrast to finding more information about the label.
- **Additional information to verify label**. This variable measures to what extent the existence of additional information to verify label is important for consumers.
- **Government endorsement**. This variable measures the importance of endorsement by government in terms of legal and regulatory system and link to government website for consumers.
- **NGOs based-label**. This variable measures the importance of label supported or developed by NGOs for consumers.
- **Prior knowledge of label**. This is a control variable measuring the extent of respondents prior knowledge of sustainable certification and labelling practices in general.
- **Country**. This is a control variable indicating the country of birth of the respondent. We divided the country into three, US-born respondents, Mexican-born respondents and other countries.

## 3.3 Analysis Technique

We used Ordinary Least-square regression for multivariate variables to identify the significant predictors. We regressed a set of antecedents of trust against the main dependent variable (Trusting Beliefs) and its three sub-variables, competence, benevolence and integrity.

# 4. RESULTS AND FINDINGS

In this section of the paper we start by documenting the validity of the measurement instrument, we continue then with the regression analysis.

## 4.1 Validity and Reliability Analysis

To verify discriminant and convergent validity we performed principal component analysis to items belonging to all constructs. We verified that items loaded high on their corresponding constructs.

Table 2 shows the constructs, sources, number of items and internal reliability of the scales used in the study. The reliability estimates (Cronbach's alphas) for all constructs falls within acceptable ranges (>=.70), except for variable certification reputation and additional information to verify label.

## 4.2 Ordinary Least-square Regression Analysis

This study postulates causal effects among various factors that influenced consumers' trust on information contained in a product's label and package that refers to sustainable practices. We tested four different models evaluating the determinants of consumer's trust from four perspectives of trust: trusting beliefs, competence, benevolence and integrity. Each of these models was tested twice, with and without the interacting variables (prior knowledge of label and Country). The analysis, using multivariate regression analysis, reveals the influence of certain factors determining consumer's trust on information about the brand holder's sustainable practices presented in product packaging.

**Table 2. Measurement Instruments and Internal Reliability**

| Construct | Source | Number of Items | α |
|---|---|---|---|
| *Dependent Variable* | | | |
| Trusting Beliefs | Porter and Donthu [44] | 8 | 0.8834 |
| Competence | Porter and Donthu [44] | 4 | 0.761 |
| Benevolence | Porter and Donthu [44] | 3 | 0.7145 |
| Integrity | Porter and Donthu [44] | 3 | 0.7832 |
| *Independent Variables* | | | |
| Disposition to trust label | Gefen [14]; Jiang, Jones, and Javie [19] | 3 | 0.7883 |
| Brand and company reputation | Grabner-Kraeuter & Kaluscha [16]; De Pelsmacker, Driesen, & Rayp [43] | 2 | 0.7997 |
| Certification Reputation | Jiang et al. [19]; Jøsang et al. [20]; Grabner-Kraeuter & Kaluscha [16] | 3 | 0.5669 |
| Additional information to verify label | McKnight, Choudhury, and Kacmar [36];Vance, Elie-Dit-Cosaque, and Straub [61]; | 2 | 0.5989 |
| Government endorsement | Li, Hess, and Valacich [26]; McKnight et al. [36] | 2 | 0.7410 |
| NGOs based-label | Michaelidou & Hassan, [38] | 2 | 0.7140 |
| *Control Variables* | | | |
| Prior knowledge of label | Gleim, Smith, Andrews et al. [15] | 3 | 0.8345 |
| Country | | 1 | N/A |

In conjunction with the preliminary model identified from previous studies, Table 3 presents the regression result for the four models (eight sub-models). The regression results in Table 3 indicate the values of the F test for each of the eight sub-models

are significant at 0.05 level. This result indicates that there is a general relationship between all predictors and the dependent variable.

**a. Disposition to trust as determinant of consumer's trust**

Disposition to trust third party certification and the product label and packaging emerge consistently as a significant predictor to induce trust on information on sustainable practices contained in a product's label and package (Table 3). For model 1a and b, the coefficient of disposition to trust is 0.50 and 0.52 respectively. This indicates that one standard deviation increase in consumer disposition to trust label will increase their trust on third party certification and label by 0.5. For model 2a and b, the coefficient of disposition to trust is 0.30 and 0.33. The positive and significant results are also consistent for model 3 and model 4. The coefficient of disposition to trust for model 3 is 0.17 and 0.18 and for model 4 is .37 and .38. It is expected that disposition to trust has positive and significant impact. This is especially true considering that close to 50% of the respondents are very conscious about sustainability and little more than 75% are very conscious about healthy lifestyle.

**b. Certification, Brand and Company Reputation**

The impact of certification reputation is consistent across the model. Certification reputation emerges as positive and significant predictor of trust except when consumer's trust is measured by the extent to which information contained in product label and package could induce trust in terms of integrity of the information. Certification reputation is not significant when trust is measured as the integrity of certification and label, both with and without the inclusion of the interacting variables. In a sense, this may imply that the reputation of the certificate is related only to the attributes of competence and benevolence, but not integrity.

Brand and company reputation emerge as significant predictor to induce trust on information contained in product's label and package with or without inclusion of interacting variables. This variable has significant and positive influence on inducing consumer's trust, except when the dependent variable measure trust on competency of the certification. The finding suggests that consumers did not associate brand and company reputation with trust on the competency of the certification schemes for sustainability practices.

**c. Additional information to verify label**

Results presented in Table 3 also indicate that additional information to verify label does not emerge as significant predictor to induce trust for all four models. This result is consistent with the literature regarding information overload and smart disclosure [35,61,65]. That is to say, increasing the availability of information to verify and trace certification is not sufficient or even useful for end-consumers. Additional information is only useful for power users such as a consumer advocate. Given that end-consumers often have limited time and that purchasing decision making is a complex endeavor [41]. As introduced in the literature review, we posit that end-consumers might prefer simple forms of information to help them making purchasing decision. These simple forms of information may be introduced through mobile or web apps produced by power-users who have the capability and resources to evaluate and analyze the additional information to give better and more trustworthy information for them.

**d. Supports from Government or Not-for-profit Organizations**

Our findings in Table 3 indicate that government support in terms of providing legal protection for consumer from falsification or fraud from irresponsible brand holders or certification schemes emerge as significant predictor to induce trust for all the four models, with or without the inclusion of interacting variables. Although legal system in online environment is not yet as robust as conventional market, legal systems from government are crucial for generating trust toward the transaction in the market [1].

In addition, we found an intriguing result for the influence of NGOs as endorser on inducing consumer's trust. Endorsement by NGOs in supporting the development of standards significantly influence the formation of consumers' trusting belief on packaging and labeling information but also influence the formation of trust in terms of competence and benevolence of certification. On the other hand, we did not found that endorsement by NGOs is a significant predictor of trust on information as measure of integrity of the third party certification.

We found that the influence of endorsement by NGOs varies depending on countries. The influence of NGOs endorsement to induce consumers' trust differs for consumers born in Mexico as compare to consumers born in other countries. However, there is no difference on the influence of NGOs endorsement to induce trust for consumers born in the US and in Mexico. However, we found that the influence of NGOs endorsement to induce trust between consumers born in Mexico and US only appear when trust on information is measured as indication of integrity.

# 5. DISCUSSION

## 5.1 Key Findings

Current heightened attention to the issue of open data, private sector transparency and smart disclosure necessitate an understanding about what information induces consumers' trust. In this paper, we argue that an understanding of consumer reactions to various elements of information regarding product and certification as the basis to building trust is crucial for the adoption and usage of smart disclosure tools that make use of such information. Such understanding is necessary for data owners, data publishers and smart disclosure tool developers to ensure that data and applications being developed and published are used by users/consumers. That is to say, smart disclosure requires an understanding of what data are most relevant and appropriate to satisfy user's needs in order to make it available [5]. It will also benefit smart disclosure tool developers to ensure that their apps provide users with the most efficient way to fulfill a specific task that users have to perform, based on data that they trust. In this section, we discuss some of the key findings of this study. The analysis results identify key five factors as determinants of consumer's trust on information on sustainable practices contained in a product's label and package as follows.

Consumer's disposition to trust determines their trusting beliefs on information about sustainable practices depicted in product package and/or label. This finding is expected. Consistent with previous studies [14,33,47], consumers with higher disposition to trust have propensity to trust the information about sustainable practices presented in product packaging or eco-label.

This finding further support and validate the assertion by McKnight and Chervany [35] on the likely impact of disposition to trust to trusting beliefs. Reputation of the brand holder as well

as reputation of the certification schemes influences consumer's trusting beliefs on information about sustainable practices available in product packaging and label.

Concurring to previous studies, consumers use reputation as cognitive trusting base to infer trust of a trustee [26,37,50], qua certification and brand holders.

In particularly when direct and/or initial experiential information is unavailable [26].

However, in contrast to previous studies [26,45], we found that brand holder reputation is not a significant predictor that affects consumer's trusting beliefs about the trustee competence and certification reputation is not a significant predictor of consumer's

**Table 3. Multivariate OLS Regression Results**

| | Trusting Beliefs on Certification Information | | Trust on Competency of Certification | | Trust on Benevolence of Certification | | Trust on Integrity of Certification | |
|---|---|---|---|---|---|---|---|---|
| | Model 1a | Model 1b | Model 2a | Model 2b | Model 3a | Model 3b | Model 4a | Model 4b |
| Disposition to trust | 0.50* (0.10) | 0.52* (0.10) | 0.30* (0.09) | 0.33* (0.09) | 0.17* (0.06) | 0.18* (0.09) | 0.37* (0.08) | 0.38* (0.08) |
| Brand & Company Reputation | 0.37* (0.10) | 0.38* (0.11) | *0.14 (0.08)* | *0.14 (0.08)* | 0.27* (0.07) | 0.28* (0.08) | 0.25* (0.08) | 0.25* (0.08) |
| Certification Reputation | 0.50* (0.13) | 0.53* (0.13) | 0.35* (0.09) | 0.37* (0.09) | 0.32* (0.09) | 0.33* (0.09) | 0.20 (0.11) | *0.21 (0.11)* |
| Information to verify label | 0.09 (0.13) | 0.13 (0.13) | 0.09 (0.09) | 0.11 (0.10) | 0.08 (0.09) | 0.10 (0.10) | -0.02 (0.09) | 0.02 (0.09) |
| Government role – provide legal protection | 0.40* (0.12) | 0.49* (0.14) | 0.33* (0.09) | 0.40* (0.11) | 0.16* (0.08) | 0.20* (0.11) | 0.20* (0.10) | 0.24* (0.12) |
| Government role – provider of information | -0.17 (0.16) | -0.20 (0.16) | -0.14 (0.11) | -0.17 (0.11) | 0.02 (0.11) | 0.02 (0.11) | -0.18 (0.12) | -0.19 (0.11) |
| NGOs based certification | 0.36* (0.16) | 0.19 (0.19) | 0.23* (0.11) | 0.14 (0.14) | 0.34* (0.11) | 0.29* (0.14) | 0.06 (0.12) | -0.10 (0.15) |
| NGOs role as provider of information | 0.09 (0.16) | 0.14 (0.17) | 0.08 (0.10) | 0.12 (0.11) | -0.10 (0.10) | -0.09 (0.11) | 0.16 (0.12) | 0.19 (0.12) |
| Prior knowledge of certification | 0.02 (0.09) | 0.03 (0.10) | 0.02 (0.07) | 0.03 (0.07) | -0.07 (0.06) | -0.07 (0.07) | 0.09 (0.07) | 0.11 (0.07) |
| USA[@] | 0.72* (0.32) | -0.05 (0.33) | 0.38 (0.24) | 0.62 (0.83) | 0.55* (0.20) | 0.38 (0.83) | 0.35 (0.23) | -1.17 (0.82) |
| Other country[@] | 0.19 (0.33) | -0.95 (1.29) | 0.15 (0.24) | -0.33 (0.87) | 0.03 (0.24) | 0.11 (0.87) | -0.09 (0.24) | -1.47 (0.96) |
| Prior knowledge * Certification reputation | | -0.08 (0.08) | | -0.02 (0.06) | | -0.06 (0.06) | | -0.05 (0.05) |
| Legal protection and support * USA[@] | | -0.10 (0.33) | | -0.10 (0.23) | | -0.06 (0.23) | | 0.00 (0.26) |
| Legal protection and support * Other country[@] | | -0.31 (0.25) | | -0.25 (0.16) | | -0.15 (0.16) | | -0.12 (0.19) |
| NGOs based certification * USA[@] | | 0.41 (0.35) | | 0.01 (0.24) | | 0.13 (0.24) | | 0.62* (0.24) |
| NGOs based certification * Other country[@] | | 0.81* (0.40) | | 0.49 (0.30) | | 0.24 (0.30) | | 0.70* (0.33) |
| Constants | -2.07 (0.49) | -1.85 (0.56) | -1.51 (0.38) | -1.48 (0.43) | -1.31 (0.34) | -1.26 (0.38) | -0.75 (0.39) | -0.44 (0.42) |
| *Number of observations* | 157 | 157 | 159 | 159 | 159 | 159 | 159 | 159 |
| $F_{value}$ | 17.27 | 12.20 | 15.92 | 11.68 | 10.22 | 6.83 | 9.91 | 7.54 |
| $R^2$ | 0.49 | 0.49 | 0.43 | 0.43 | 0.41 | 0.40 | 0.34 | 0.36 |

*@ based comparison is Mexico*
** indicates significant at 0.05 level*
*italic indicates significant at 0.1 level*

As mentioned above, this may imply that in the case of sustainable consumption, brand reputation is not related to competence or certificate reputation not related to integrity because consumers are most interested in competence and integrity of the certifier who is a different actor in the system.

In this way, we posit that the finding suggest that consumers need more information, in addition to reputation, to use for their cognitive trusting base to infer trust about trustee's competence and integrity, probably including information from the certifier, as well as the application of processes and standards for certification. That is to say, these attributes are mostly related to a third party not involved with the brand or the organization creating the standards.

On the other hand, results also show that the existence of additional information to verify these certification practices is not a significant predictor of consumer's trusting beliefs. If as we stated in the previous paragraph, this information is important to better understand competence and integrity, this introduces the challenge of how to disclose such data in an easy way to consumers. That is to say, disclosing more information is not necessarily useful to help end-consumer in making decision, and could result in information overload, which is counterproductive for end-consumers. End consumers need additional yet easy to understand information about certification practices and the certifier itself. This finding is consistent with our argument for the need of information intermediaries, qua power users, who have the resources and capabilities to manipulate the information through smart disclosure tools and provide more trustworthy yet concise and simple information from which end-consumers could make better decision.

Support from government agencies and endorsement from non-for-profit organizations significantly influence consumer's trusting beliefs on sustainable practices information. Valuable government support comes in the form of legal environments to protect consumers from falsification and forgery of information that could mislead consumer's decision significantly influence consumer's trusting beliefs on information. Controlling for this effect, consumers also place higher trust on certification endorsed by NGOs. Previous studies argue that solid NGOs based certification is central in establishing and maintaining the legitimacy of certification schemes [46], which in turn could induce trust to consumers.

Finally, we found that consumers' trusting belief on information varies between countries. The consumers' trusting belief differs between consumers who are born in the US and for those born in Mexico. Consumers who are born and/or raised in US put higher trust on information provided by third party certification than consumers who are born and/or raised in Mexico. In addition, the impact of endorsement by NGOs to induce consumer's trusting beliefs also varies by country. This finding complements existing studies that examine the critical role of trust across culture. The finding supports the assertion that different cultures affect the expectation of trustworthiness from consumers to the brand holders [18]. Our study indicates that trusting beliefs on information about sustainable practices also varies depending on countries and presumably the culture celebrated in that country.

# 6. CONCLUDING REMARKS

In this last section of the paper we present some main contributions to theory and practice of open data and smart disclosure.

## 6.1 Contribution to Theory

Our study contribute to understanding of the mechanism of trust production based on institutional factors in sustainable consumption, and particularly, government role in fostering trust in the market-place. The existence of a set of institutional factors, such as societal norms and legal systems, ease the way for risk taking and trust development. For instance, Rousseau [49] reasoned that the legal system, which may be viewed as a control mechanism, nonetheless, promotes trust because it makes "expectations of harm low-probability events" (p. 400). Institutional factors, however, can also hinder the development of trust, if they create rigidity in resolving conflicts [54,55]. Our research revealed that government's soft measure in disclosing information is not sufficient, without the hard regulation on product standard and certification process. As can be seen in our research, consumer perceived greater level of trust when a product label and certification is backed by legal framework because opportunistic behaviors, such as falsification or forgery, would be prohibited. Our research also highlights the importance of NGO and third-party certification process. What is interesting is the difference among respondents from different country in their reaction to the role played by NGOs. Future study may explore why and how consumer react differently to the existence of NGO in ensuring product standard conforming to the sustainable practices.

## 6.2 Contribution to Practice

Trust in the information has been considered a key factor in the promotion of sustainable patterns of buying behaviors like the ones promoted through smart disclosure practices. In this way, our findings provide implications for smart disclosure tools developers in developing smart applications that address user's needs and provide information that users will trust. First of all, findings in this paper suggest that smart disclosure initiatives require information intermediaries that aggregate relevant data to consumers, given that they are not likely to check the veracity of the information themselves.

Brand names and certificates are important elements to consider when creating trust on the consumer, but there is other information relevant to creating trust, particularly that related to the current practices and procedures of certification. Including this information in a simple way to consumers imposes a challenge for developers and data owners. Finally, the good news for information intermediaries interested in developing solutions for Smart disclosure is that prior knowledge to certification and labelling in general is not an important factor in trust production, which implies a bigger audience for smart disclosure.

## 6.3 Limitation and Future Research

This study uses literature on trust, predominantly from information science perspectives. Yet, due to the limitation in pages, we did not specifically explain the literature in the literature review section. For those who are interested in pursuing the study of consumer trust should consider also the literatures that are mentioned in the research model section. We also acknowledge that there are other bodies of literature focusing on trust that we did not yet consider in this study, such as: works on antecedents of trust toward online retailers and works from the economics perspective. Future research could expand the constructs used in this study by considering these domains. Other limitation to mention is the use of students from the US and Mexico as respondents for this study limit the generalizability of the findings. As such, the findings of this study should be

interpreted as an understanding of consumers trust from the perspective of US and Mexico. Future research could attest and apply the construct and model to other countries. Such comparison will add to the generalizability of the findings.

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